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Recent literature on teaching and learning reflects exciting developments in teacher education which also provides teachers with a new perspective on research as they take a more active role in their personal learning process (Rich, 1983). There is a growing awareness that classrooms and students provide data that will allow teachers to draw their own conclusions about learning (Harste, Burke, & Woodward, 1984). Teachers who conduct systematic inquiry in their own personal or professional environments are part of an increasing number of educators who participate in self designed personal and professional development.

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Teacher research involves a systematic collection of information that is designed to bring about change. This active research could be described as "research undertaken by educators in the field in order to improve their practices" (Corey, 1953). An important side effect is the learning that occurs during the process. The goal is to change one classroom, solve one problem or improve one teacher's strategies, but teachers cannot help but learn about their students and their teaching during the process.

An action research project in which the teacher becomes the collector, analyzer and interpreter of data recognizes the importance of contextual understanding. The real life setting of classroom research can lead to exploration of exciting instructional methods and development of new ways of doing things.

Teacher educators have a vital role in this learning and research perspective. The effectiveness of the research and learning activity is greatly increased when teacher educators and classroom teachers work together to design a classroom learning activity.

Furthermore, when teacher researchers are provided opportunities to share this learning in a collegial setting (e.g., university classroom), the information gain is greatly increased.

Properties of Teacher Research

There are three major properties of classroom research which make it ideal for learning in a teaching situation. The first property is that classroom research is dependent on field work. Classroom research is convenient for teachers since the field is their classroom and the inquiry is designed to take place in the classroom without taking time away from regular instruction. It does not introduce unusual persons or events and it doesn't distract or disrupt the classroom. This research can occur during regular classroom activities (Chall, 1986) as data is collected from a real situation and provides natural responses.

Secondly, the teacher becomes the primary research instrument. The teacher researcher who participates in the daily classroom life is capable of empathetic understanding impossible with other research methods (Wilson, 1977). There is no need for highly sophisticated testing procedures, statistical models or computer programs because the teacher as observer is the prime source of data. The teacher uses what is available in the classroom and gathers data such as student records, anecdotal comments or student responses and utilizes this data to view interactions and transactions in the classroom.

"Existing theories rarely offer a perfect fit to individual classrooms...."

The third and final property of classroom research is that it is inductive. Existing theories rarely offer a perfect fit to individual classrooms. Classroom research builds theories in specific classrooms as the teacher attempts to understand and learn about her own situation. What is learned from research activities is more specific and practical to individual classrooms and teachers. Classroom theories and answers may not necessarily generalize to all learning situations but could lead to hypotheses that may be applied in different settings.

Benefits to Teachers

Teachers can benefit in several ways from being involved in a classroom research project. As teachers answer questions about their classrooms they can improve their teaching, learn about student progress and develop greater awareness and insights into the

learning process (Cullinan & Strickland, 1986). This learning is based on knowledge which reflects real world events and has direct implications on individual classrooms.

When teachers observe, collect and organize classroom information so they can answer questions, the potential for improving their instruction is present. They can try new methods and modify existing procedures while systematically collecting information that will indicate the effect of the changes. The activity surrounding classroom research allows for immediate modification in classroom practices without long delays to fit the research into a particular classroom. New information leads to new understandings and questions. Thus, the whole process is recursive as the teacher has another opportunity to study a new classroom situation after changes have been made.

"New information leads to new understandings and questions..."

Just as teachers learn about their classrooms, they also learn about their students' progress by systematically observing behaviors and responses. Student records, anecdotal accounts or student responses not only answer questions about the whole classroom, but help a teacher gain insights about an individual student. The students become benefactors of the research because the teacher uses her knowledge of students, and their reactions to the classroom environment to make instructional modifications.

Systematic observation of instruction and students' responses to instruction will ultimately provide insights regarding the learning process. As teachers learn about their own classrooms and their students, they cannot help but know more about the learning process. The whole idea is that learning can be looked at, understood and explained. Teachers should try to get at the meaning inherent in learning by seeking to understand it and discover how it occurs in their classrooms. Teacher research, by its very nature, allows teachers to understand the learning process more clearly.

A Model for Cooperation

Even if the value of teacher research is recognized, some teachers may find it difficult to know where to begin. Graduate classes can offer a structure for a classroom research activity. Teacher educators and the classroom teachers become a team that collaborate to solve problems and answer questions. Classroom research and graduate coursework can join classroom teachers,

teacher educators, researchers and learners together in various inquiry roles and situations. The added perspectives of two or more professional views also contribute depth and quality to the research. This article offers suggestions that might be helpful for teachers and university faculty to form a team within a university graduate class that encourages teachers to answer questions and learn from their own classrooms.

TEACHER RESEARCH MODEL

QUESTION FORMATION

Problems	Hypothesis	Modifications

DATA COLLECTION

Teacher Researcher	Observer	Learner
Research Logs	Checklists	Work Sample
Audio Tapes	Observation	Assignment Responses
Records of Conferences	Charts	Self Evaluate
Lesson Plans		Reactions
		Reports
		Interviews

DATA ANALYSIS

Description	Categorization	Classification	Critical Incidents
Student's Language	Behaviors	Prioritize	Specific Behaviors
Teacher's Narrative	Responses	Hierarchical Formation	Demonstrative Behaviors
	Student		
	Product		

REPORTING

Description	Corraboration of Existing Research	Hypothesis Generation	Recommendations and Implications	Comparison of Classrooms

Figure 1

The model of classroom research that is presented for graduate coursework is flexible and provides procedures to guide classroom teachers in a classroom inquiry that produces results which can be used immediately in the classroom under observation (See Figure 1). The model must be viewed as recursive and transactive in nature for as the teacher researcher becomes more involved in the research process more questions and modifications evolve.

Question Formation: The teacher researcher must first ask a question that will guide the inquiry. This question may come from a problem occurring in the classroom, a new procedure that is introduced or curiosity in how a commonly used activity might be modified. Usually the questions asked in teacher research are not different from questions normally asked by teachers in the course of daily activities. The difference is in the systematic nature of observation and analysis. Questions such as "How do things happen in this classroom environment?" and "Why do they happen in this particular way?" may be formulated.

The university class can serve as a sounding board and a resource as the teacher researcher begins developing questions to be answered in her own classroom. All class participants respond to each others' ideas and provide input from their own experiences and readings. The university personnel can direct the teachers to current readings and happenings in their areas of interest. The class structure should require the teacher researcher to verbalize the questions before going on to collecting the data which will answer the question. Decisions must be made about how the question will best be answered. Decisions such as, "Should I select certain children to observe in a variety of situations or select a certain classroom activity and observe all children who are involved?" must be answered. University class discussions and reactions can help the teacher set limits and delineate her boundaries.

Data Collection: The teacher researcher must then decide how to collect data. Most good teachers intuitively collect information during their daily routine. When a teacher becomes an action researcher the collection of these common place observations become regular and systematic. The teacher learns to organize available classroom information in a logical order which makes her understanding of the classroom a natural part of her instructional activity.

To answer questions, the teacher decides what to observe, the time frame of observations and what data should be collected. The teacher may view such areas as student responses, plans, instructions and evaluations from three differing perspectives. Researcher, observer and learner based data can provide different types of information from the classroom.

The research perspective recognizes teacher/student interactions from the teacher's point of view. When the teacher introduces activities in the classroom she obtains information from daily records of instructional strategies, lesson plans, charts of daily conferences and notes of student involvement in discussions during instruction. Realizing that the teacher is an important data contributor, she records her feelings about each activity associated with the research project. The teacher's personal reactions are recorded as new approaches and instructional activities are implemented in the classroom. Observations such as instructional strategies which do not involve everyone in the class, activities which needed more introduction or less introduction and amount

of teacher preparation required are important data information that added to the understanding of the classroom learning process.

The second data gathering perspective comes from teacher observations during the activity or instruction. The teacher may use checklists and observation charts to record student reactions to assignments. Qualitative information such as perceived student frustration, student interaction and opportunities for sharing may provide additional information.

Learners' responses to classroom activities and assignments provide the third perspective from which information can be obtained. Work samples, overall achievement and students' self evaluations provide yet another valuable source of information to add to the teacher's learning and decision-making ability.

The data collection activities can also be supported by planned activities in a graduate class. Classmates can reflect on the type of data collection a teacher researcher has selected, and can also become "trouble shooters" as the teacher researcher shares what is occurring during the data collection phase. Teacher researchers learn from each other as different methods of systematic data collection are shared and implemented. The graduate class can also serve as a support team as good ideas go awry and need modification or development.

Data Analysis: The next job of the teacher researcher is to analyze information by describing, categorizing, classifying and presenting critical incidents. "Thick descriptions" present exactly what has taken place in the classroom and can answer some teacher researcher questions very adequately. Many times students' own language is used in descriptions to present a realistic view of the classroom or teachers may use their own words to narrate events and behaviors occurring in their classrooms. Other questions may be best answered by placing like behaviors and responses together in categories. Some classroom data can best be explained by organizing responses and behaviors in a hierarchal order suggesting a progression or developmental patterns. Finally, specific behaviors, memorable events or demonstrations may become "critical incidents" which help answer particular questions asked by the teacher researcher.

Describing, categorizing, classifying and suggesting critical incidents will help the teacher researcher arrange the data in a logical order to answer the question. Some categories may be established before the data is collected, while other categories emerge during the data collection. Data collection and analysis becomes interdependent and recursive since analysis of the data may result in new directions for data collection. Because teachers are using their own situation for research, they have continuous access to the data providers and can return to the scene of the research with modifications of plans.

University classes can provide support as a teacher researcher establishes methods of analysis. The university class can provide a "peer debriefing" opportunity as teachers share data and the class members respond. This informal sharing and reacting helps the teacher researcher to consider differing perspectives as she and her colleagues continue learning about each others' classrooms.

Reporting: Graduate coursework provides the opportunity to create a "product" from the classroom research project. Teachers should be encouraged

to report their research project to others in oral or written form. As with any type of research, the presentation should include background information, statement of the problem and questions, description of procedures, analysis of the data and conclusions.

Teachers should be encouraged to justify their questions and hypotheses with summaries of current research and readings. In addition to concise background and statement of the problem and question, explanations of procedures and activities should be complete enough so that other educators could replicate the research. Presentation of the findings should include categorizations, classifications or critical incidents so that answers to questions are supported in a clear, precise manner. And finally, the conclusions should be complete with answers to questions, comparisons with other classrooms or existing research and new hypotheses and ideas regarding learning. Synthesizing the experience and explaining to others is an important part of the learning process. Not only can these reports serve as a final project for a graduate class, they are potential conference reports, inservice presentations and professional publications.

Conclusions

The tools of classroom research are highly compatible with strategies for observing students and looking for patterns of behavior which help us understand our students' learning processes (Heath, 1983). Rich (1983) states that changes in inquiry are providing teachers with a new look at research, an understanding of the learning process and a valuable professional experience. Teacher research can provide classroom teachers access to the inquiry process. When teachers observe and collect data in the classroom in order to explain events and point out similar and dissimilar findings, they learn about the research process, their students and their teaching. This provides a creative type of professional development which encourages the understanding of the learning process. It is logical to assume that teacher educators should be actively involved in this process as well.

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